Scientific Inquiry

K-1 The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.

K-1.2 Use tools (including magnifiers and eyedroppers) safely, accurately, and appropriately when gathering specific data.
Taxonomy Level: 3.2-B Apply Conceptual Knowledge

Previous/Future knowledge: As with other indicators at this grade level, students will experience their first formal introduction to important science skills and processes. The development of these skills and processes will serve as the basis for all future science investigations. This is the first time students are formally introduced to scientific tools and the procedures for using them safely, accurately and appropriately. In future grades, students will continue to use these tools, when appropriate, as well as use new tools when collecting scientific data. A complete list of tools can be found in Appendix A of the Academic Standards.

It is essential for students to know that every simple scientific investigation provides information. A *simple scientific investigation* is designed to answer a question. The information gathered in the investigation is called *data*. Data can be simple observations or numbers.

It is essential for students to know that different tools are needed to collect different kinds of data.
- A *magnifier*, or hand lens, is a science tool that can be used to see details of objects that are too small to be seen clearly with unaided eyes.
  - A magnifier should be held between the eye and the object being viewed.
  - The magnifier should be moved back and forth until the object looks clear.
  - Magnifiers can be used to observe physical properties of objects.
- *Eyedroppers* are short tubes fitted with rubber bulbs at the top of the tube that are used to measure liquids by drops when gathering specific data.
  - Squeeze the bulb before inserting it into the liquid to obtain some of the liquid.
  - Eyedroppers can be used to add small amounts of liquids.

It is essential for students to use care when handling science tools when gathering data.
- Magnifiers should not be used to look at the Sun or burn objects.
- Some magnifiers and eyedroppers may be made of glass. Be careful not to drop them.
- Be careful not to scratch the lens of the magnifier.
- Do not use a magnifier if it is cracked or broken.
- Eyedroppers should be cleaned after each use.
- Classroom eyedroppers should not be used to put liquids in the eyes.

It is not essential for students to know how to use other tools at this time, such as rulers, measuring cups, or thermometers. However, an introduction to appropriate tools is acceptable if relevant to instruction.

Assessment Guidelines:
The objective of this indicator is to *use* tools safely, accurately, and appropriately when gathering data; therefore, the primary focus of assessment should be to apply correct procedures to the use of magnifiers and eyedroppers that would be needed to conduct a science investigation. However, appropriate assessments should also require students to *identify* appropriate uses for magnifiers and eyedroppers; *illustrate* the appropriate tool for an investigation using pictures, diagrams, or words; *recall* how to accurately determine the measurement from the tool; or *recognize* ways to use science tools safely, accurately, and appropriately.

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